DOCUMENT RESUME

ED 245 949 SO 015 705

AUTHOR Eisley, Mark E.; Merrill, Paul F.
TITLE Effects of Context vs. Substance in Stories Portraying Moral Behavior.
PUB DATE Apr 84
NOTE 24p.; Paper presented at the Annual Meeting of the American Educational Research Association (68th, New Orleans, LA, April 23-27, 1984).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Context Clues; Educational Research; *Ethical Instruction; Higher Education; Moral Development; Moral Values; Motivation Techniques; *Short Stories; *Values Education
IDENTIFIERS *Story Structure

ABSTRACT

Examined were the effects of story elements in teaching moral concepts to college freshmen and sophomores. The two story elements studied were (1) context (descriptions of observable circumstances and observable actions) and (2) substance (descriptions of the internal character, feelings, desires, and beliefs of the actor). A total of 59 students were asked to read various versions of stories and rate (1) how impressed they were with the account, (2) how they perceived the main character in the story, and (3) how much the account made them feel inclined to be more virtuous. Latin squares and matched sample designs were used in the research design. Findings include the following. Substance alone and context alone produced perceptions of similar levels of human virtues in main characters. However, the addition of context to substance increased story receivers' ability to perceive virtue in a character more than the addition of substance to context. Accounts containing only context were more impressive than those containing only substance. Making both elements explicit in the same story improved its impressiveness as well as its motivating power. (Author/RM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED245949

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Mark E. Eisley
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Effects of Context Vs. Substance in Stories Portraying Moral Behavior*

Mark E. Eisley and Paul F. Merrill

Brigham Young University

ABSTRACT

In this study stories were used in an attempt to teach moral concepts. Story elements were divided into "context" (external circumstances and actions) versus "substance" (people's internal feelings, desires and beliefs). Explicitness of each element was tested for its effect on stories' impressiveness, motivational power, and ability to portray human virtues. Latin squares and matched sample designs were used with adult subjects. Substance alone and context alone produced perceptions of similar levels of human virtues in main characters. But adding context to substance increased story receivers' ability to perceive virtue in a character more than adding substance to context. Accounts containing only context were more impressive than those containing only substance. Making both elements explicit in the same story improved its impressiveness as well as its motivating power.

*Paper presented at the annual meeting of the American Educational Research Association, New Orleans, April 26, 1984

SO 015 705

Introduction

Beyond concrete and defined concepts, a more illusive type of concept has received recent attention in instructional science literature. However, awareness of these concepts and the difficulties of teaching them is anything but recent. They have been the preoccupation of moralists and philosophers for millenia. These more illusive concepts deal with essences which are neither physically observable nor precisely definable. They seem to be imparted best through the use of metaphors, parables, and stories. It is to these "intangible concepts" and how they may be taught that the present study is addressed.

Concept Acquisition and Stories

A concept can generally be thought of as a learner's internal representation of a class of objects, events, symbols or entities which are categorized together based on common characteristics. It is usually linked in the mind with a class name or label. Acquisition of a concept which is culturally agreed upon enables a learner to "correctly" classify previously unencountered instances as members of the class.

The two types of concepts most often referred to in instructional design literature are "concrete" and "defined" concepts (Gagne, 1977 and Gagne and Briggs, 1974). A concrete concept involves a class of objects, object properties, or object positions which are tangible—observable through the physical senses. For example, objects: ball, door, car; object properties: round, rectangular, red; object

positions: high, below, beside. Instances of concrete concepts can be pointed to by the learner.

Defined concepts are those in which critical attributes for classifying may be enumerated. This list of characteristics is referred to as a definition. Very often instances of defined concepts cannot be physically observed (though some can). Examples include acceleration, standard deviation, and gross national product.

A third type of concept has been identified by Merrill (1979) and others (Bruner, Goodnow, & Austin, 1956; Gallie, 1964; Kekes, 1976; Smith & Medin, 1981; Hilton, 1982) and variously labelled "intangible concepts," "abstract concepts," "Essentially Contested Concepts," and "imprecise concepts." Examples of such concepts are freedom, love, justice, integrity, and beauty.

Many intangible concepts fall into the area of human virtues such as loyalty, hopefulness, compassion, courage, etc. "Human Virtue concepts" are of interest not only because of unique pedagogical issues, but also because of concerns for the instructional outcomes having to do with the "affective domain" (Gagne & Briggs, 1974). These outcomes might include cumulative effects such as character development or moral development (Kohlberg, 1963). Encouraging human virtues through educational methods would seem to be a goal of some interest in a society where dishonesty, crime, delinquency, and apathy are a growing problem.

Concrete and defined concepts are acquired partly through inference from pointing out to the learner both examples and nonexamples

of the concept being taught (Merrill and Tennyson, 1977). It can be logically reasoned that human virtue concepts are very similar in this respect. Although instances of human virtue concepts in their essence are difficult to observe, the "contexts" in which human virtues occur **are** tangible. However, unlike instances or examples of most concrete and defined concepts, what is observable in instances of human virtue concepts is a chronology of events rather than something which is stationary. But the human virtues themselves—the "substance" (what goes on inside the person, which is the essence of any human virtue) is totally unobservable through the five natural senses. The intangible element of a human virtue concept must somehow be inferred. The dilemma for learning is that the substance of a human virtue concept cannot be fully inferred, conceptualized, or understood without awareness of contexts in which it occurs; nor can the meanings of the contexts be fully grasped without awareness of the substance behind human actions.

Stories have a somewhat unique advantage over even actual observation of individuals behaving virtuously or unvirtuously. Stories are able to report the inner thoughts, beliefs, desires, and motivations of the actors. Stories have another advantage for educators. Although many contexts naturally occur in which human virtues are manifest, pedagogically and ethically they are not as susceptible to classroom demonstration and manipulation as are concrete and defined concepts. Therefore, the most practical tools left to an instructor for teaching human virtue concepts are stories and certain kinds of dramatization.

In this study two mechanical elements of stories were defined so as to parallel the theoretical elements (substance anc context) of human

virtue concepts. These mechanical elements were therfore similarly called the "context" (descriptions of observable circumstances and observable actions) and the "substance" (descriptions of the internal character, feelings, desires and beliefs of the actor). It is possible for the receiver of a story to be made explicitely aware of either or both elements associated with a human virtue concept. Since context and substance can both be either present or absent in a story, four combinations are possible (described in detail below).

Methods

Treatment descriptions. Out of many candidates four true stories about exemplary individuals were selected for their supposed portrayal of human virtue concepts. It was hoped (and later confirmed) that subjects were equally unfamiliar with the four stories. Each story was broken down into the four possible account types: one version in which only the context was given (called the "Context account"); one in which only the inward substance was described (the "Substance account"); one in which both the context and the substance were described (the "Context+Substance account"); and one in which neither context nor substance was described. Because the latter version had to be devoid of any chronology of actions, it took the form of a demographic description of the person. (This was called the "Demographic account".) Sample statements from all four versions of one of the experimental stories are given below:

> **Demographic:** Thomas Moore was a famous 19th centruy Irish poet. His most productive writing years were between 1818 and 1847. Moore was something of a politician, and was the friend of most of the great Whig politicians of his day. By 1818 Moore was an extremely successful man of letters,

indeed, after Scott and Byron, the most successful man of letters of his time.

Context: Moore went down to his study, where he wrote the words which said that he still loved his wife. He had never written a song before, but now he found it more natural to his mood than simple poetry. He not only wrote the words, but he wrote the music too. And the next morning he returned to the room of his mournful wife and sang to her the song he had written.

Substance: Thomas Moore believed that the external beauties are only a garnishment of the lasting beauty of the soul. He felt that the worth of the individual he had married was precious and unchanging. He desired with all his heart that she might feel the comfort of that reassurance. He hoped expression of the deep love he felt for her would bear her up to a restored state of happiness and self-respect.

Context+Substance: [Both of the above paragraphs were included in this version. Unlike this example, in many instances within the Context+Substance accounts the two elements were intermixed within the same paragraphs.]

Instruments. Accounts were to be rated on three groups of variables: (a) how impressed subjects were with the account, (b) the perceptions subjects had of the character of the main actor in the story, and (c) how much the account made subjects feel inclined to be more virtuous. The operationalization of these three dimensions is demonstrated by the adjectives listed in the first columns of Tables 1, 4, and 7.

Selection of the impressiveness items was based on factor analyses from an earlier study by Merrill, Wilcox, and Rollins (1981). Items relating to impressiveness and character perceptions about main characters were in the format of semantic differential scales. Subjects' reports of changes in their own affective states were measured using the same dimensions as those applied to the main character, but using Likert-type scales.

Experimental designs. A multiple Latin squares design was used to control for nuisance variation which might be caused by (1) individual differences among students, who served as subjects, (2) differences in main characters in the stories, (3) order of presentation of account types, and (4) gender of respondent. In this design subjects read one of each of the four different types of accounts, and each account related facts about a different individual. After reading an account, a subject would rate that account before reading the next account.

Two sets of matched sample designs were also implemented in order to make mean comparisons between Context+Substance vs. Context accounts and between Context+Substance vs. Substance accounts of the same story. Although the paired samples in some ways constituted the weaker design, they offered advantages not possible in the latin squares design. First, they provided an alternative, robust way of controlling for main character and student variance. Second, when main characters were varied, as in the latin squares, it was not possible to compare differences in character perceptions, since different characters would have automatically produced different character profiles irrespective of account type. Third, in the latin squares design not only did main characters need to be varied randomly, but order of presentation of the four account types also had to be varied. On the other hand, in the paired sample design, one objective was to see if different accounts of the same story had varying degrees of effect when presented sequentially. This sequential arrangement obviously required that the Context+Substance version (the "whole") always be presented after the

Context or the Substance (the "part"). Otherwise, prior experience would spoil any detectable differences due to account type.

Samples. Subjects for all three samples were randomly selected and assigned to treatment conditions from among freshman and sophomore students at a large western university. The multiple latin squares design involved 16 students. Two distinct samples, one containing 21 and the other containing 22 students, were drawn for the two paired response experiments.

Findings

In the Latin Squares ANOVA, the degree to which subjects were impressed with the accounts followed a similar pattern on all of the indicators (except "informativeness," which showed no significant difference based on account type). The pattern was: Demographic and Substance accounts were rated the lowest (Substance accounts perhaps having an edge over Demographic accounts); Context accounts were rated about one-half to one standard deviation higher than Substance or Demographic accounts; and Context+Substance accounts were rated approximately one standard deviation higher than Context accounts. Table 1 depicts these results in numerical detail. [On all analyses of variance, neither the gender of respondents nor the different main characters in the accounts proved to be statistically significant for any instrument item. For the sake of brevity, therefore, separate ANOVA tables are not presented here.]

The above latin square results were corroborated by the paired t-test comparisons wherein different forms of the same story were reacted

to. Table 2 shows that Context+Substance accounts are far superior to Substance accounts in terms of story impressiveness. On all of the indicators Context+Substance accounts rated roughly one standard deviation (approximately two out of seven scale points) higher than Substance accounts. When Context accounts were compared with Context+Substance accounts, on all but two of the impressiveness items the latter type were rated higher. The difference ranged approximately from one-half to one standard deviation (approximately one to two out of seven scale points). Table 3 details these differences.

Analyses of the effects of the four account types on their ability to motivate students to feel more "virtuous" on the several character dimensions showed a pattern very similar to those discussed immediately above. Table 4 reports results from the latin square design. Therein it can be noted that Substance and Demographic accounts were rated to be of nearly equal motivational strength with Substance being rated slightly higher on all variables except for the "humble" item. Context accounts were only modestly, though fairly consistently higher than Substance accounts. However, the gap between Demographic and Context accounts were generally notable. And the Context+Substance accounts were clearly more able to motivate subjects to be more inclined to be "virtuous" than any other type of account. The only exceptions were on the "respectful" and "self-disciplined" items where no significant difference ($p < .05$) was found.

The matched samples experiments confirm the findings of the latin squares regarding the motivation items. It is apparent in Table 5 that with the exception of the "obedient" item, Context+Substance stories are

more motivating toward virtuous feelings than Substance accounts. Table 6 shows a similar difference between Context and Context+Substance accounts. However, it does not appear to be as great or as consistent. Still the general trend is in favor of the Substance+Context accounts. The motivational ability of Context+Substance accounts typically rated one standard deviation (one-half to one out of four scale points) higher than Substance accounts and one-half to one standard deviation (one-half to one scale point) higher than Context accounts.

Perceptions of the moral character of the account's main actor were modestly higher for Context+Substance accounts than for Substance accounts on only six of the ten such items (see Table 7). On this same group of dependent variables, there were no significant differences between Context+Substance and Context accounts on any of the indicators (see Table 8). Apparently, in simple cases (such as the stories used in this research) adults are quite capable of making character inferences from context alone, probably because of a high degree of previous concept acquisition.

Summary. How much do different combinations of content and substance contribute to the impressiveness of a story? Demographic accounts apparently contribute least; Substance accounts outrank Demographic ones; Context accounts surpass the contribution of Substance accounts; and Context+Substance are the most impressive and engaging of all.

To what degree do the various account types help story readers to feel more motivated to be virtuous themselves? Context alone may help

slightly more than Substance alone, but a combination of the two are substantially more helpful than either alone.

How well are people able to ascertain the internal character of a story's main actor when given the different kinds of accounts? It seems that Substance accounts may be somewhat more revealing of character than are Context accounts. But readers' ability to perceive virtue in the main characters is increased more by following a Substance account with a Context+ Substance one than by following a Context account with a Context+Substance account.

Conclusions

The findings of this study are admittedly common-sensical. Their value lies not in their unexpectedness but in the empirical foundation they provide for further investigation. This study constitutes a necessary empirical step into two general lines of inquiry: pedagogical issues relating to the effects of story-relating and theoretical considerations regarding intangible and human virtue concepts.

Implications for teaching. The teaching of human virtue concepts can be performed more effectively if the findings of this study are taken into consideration. Instructional designers (and that includes teachers who design, invent, and improvise from lesson to lesson) should first of all be encouraged in their use of stories as a powerful teaching tool. The findings further commend the replacement of mere descriptions of exemplary persons' character with stories about those

persons showing how they behave and feel in the face of provocative and detailed circumstances and events.

This study underscores the importance of including in a story not only the external context, but also the internal desires and beliefs of the virtuous actors—for interest value if for no other reason. This recommendation has strong implications not only for the teachers and instructional designers, but also for biographers, historians, genealogists, journal keepers, and all other story writers or tellers.

The findings of this investigation confirm the basic hypothesis that optimally effective discriptions of virtuous character require both context and substance as herein defined. Many interesting questions on how various aspects of story-relating affect both cognitive and affective outcomes lie ahead. For example, holding the variables in this study constant in optimum combination, what would be the effects of varying such things as the following: the amount and kinds of detail in descriptions of both substance and context; whether the story is told or simply read; whether the story is dramatized or merely related; the type of person relating the story; whether the story is in first or second person; whether the story is an actual or a ficticious account; whether the story is an example vs a nonexample of human virtue concepts; whether or not the story makes explicit the personal consequences of the main character's virtuous or nonvirtuous attitudes; whether the personal consequences related are positive or negative (it is possible for virtuous behavior to be rewarded, at least temporarily, with undesirable consequences or nonvirtuous behavior with desirable consequences)? It would also be interesting to investigate whether some human virtues

concepts are harder to portray or teach than others; if so why; and given why, how the difficulty can be overcome.

Implications for theory and research.

The whole general issue of concepts which do not fit neatly into the "concrete/defined" distinction is still delightfully unsettled. "Intangible concepts," "abstract concepts," "Essentially Contested Concepts," and "imprecise concepts," and now "human virtue concepts" suggest an arena where much research is needed.

This study does shed one bit of insight into the area, and that is with regard to the nature of concepts which cannot be outwardly demonstrated in any way nor defined in any stable, universally applicable way. This element of such concepts was referred to as "substance" in this study. Since context and substance contributed in different ways to affective outcomes in story receivers, there is support for the notion that such dimensions of human virtue concepts do exist. But the findings do not clearly point the way to understanding how such concepts are acquired by learners. The subjects in this study were adults and had already acquired human virtue concepts to the degree that substance discriptions included in stories did not help them greatly to infer character attributes of main actors. It is not currently known what happens in a case where substance and context are in seeming conflict (an actor doing the "right" thing for an unvirtuous reason, or an actor who out of human virtue does something which departs from what would normally be considered "right").

Research with children also needs to be conducted in order to learn more about how human virtue concepts are initially acquired. Another interesting area for research would be to study the acquisition of human virtue concepts among morally deficient individuals such as criminals and other "social undesirables." Understanding more about human virtue concepts and their acquisition could lead to useful interventions aimed at helping learners to operate out of a higher set of motivations.

TABLE 1

Means and ANOVA Comparisons of Four Types of Accounts on Items Regarding Story Impressiveness

	Means for Each Type of Account					
Account was:	Substance	Demo-graphic	Context	Context +Substance	F-ratio for Account Type*	Level of Signif.
Informative	4.3**	5.1	4.5	5.0	1.04	.389
Interesting	4.0	4.7	5.7	6.3	7.58	.001
Enjoyable	3.9	4.2	5.3	6.3	7.09	.001
Well-organized	4.5	3.8	5.1	5.6	3.21	.036
Motivating	4.1	3.3	5.3	6.3	7.94	.000
Challenging	3.2	3.3	4.4	5.0	4.15	.014
Inspiring	4.0	3.4	5.4	6.0	5.41	.004
Well-written	4.2	3.8	4.8	5.8	4.09	.014
Profound	4.2	3.5	4.4	5.7	6.52	.001

*Degrees of freedom = 3 for all items.
**Means are from a scale ranging from 1 (low) to 7 (high).

TABLE 2

Means and T-test Comparisons for Substance vs. Context+Substance Accounts on Items Regarding Story Impressiveness

Account was:	Account Type Means: Substance	Context +Substance	T-values*	Two-tail Probability
Informative	4.0	6.1	6.3	.000
Interesting	5.0	6.8	5.7	.000
Enjoyable	4.7	6.5	4.8	.000
Well-organized	4.3	6.6	5.3	.000
Motivating	4.7	6.5	4.7	.000
Challenging	3.7	6.0	6.4	.000
Inspiring	5.0	6.3	3.7	.001
Well-written	4.2	6.4	4.4	.000
Profound	3.8	6.0	5.3	.000

*Degrees of freedom = 20 for all items.
**Means are from a scale ranging from 1 (low) to 7 (high).

TABLE 3

Means and T-test Comparisons for Context vs. Context+Substance Accounts on Items Regarding Story Impressiveness

	Account Type Means			
Account was:	Context	Context +Substance	T-values*	Two-tail Probability
Informative	4.1	6.0	5.3	.000
Interesting	5.2	5.7	0.1	.356
Enjoyable	5.0	5.7	1.5	.141
Well-organized	4.4	5.8	2.5	.019
Motivating	4.6	6.1	2.9	.008
Challenging	4.2	5.5	2.6	.019
Inspiring	5.5	6.3	2.1	.053
Well-written	4.5	5.6	1.9	.074
Profound	4.4	6.0	3.8	.001

*Degrees of freedom = 21 for all items.
**Means are from a scale ranging from 1 (low) to 7 (high).

TABLE 4

Means and ANOVA Comparisons of Four Types of Accounts on Items Regarding Their Ability to Motivate

Subject Felt More:	Means for Each Type of Account: Substance	Demo-graphic	Context	Context +Substance	F-ratio for Account Type*	Level of Signif.
Full of Integrity	0.9	0.9	1.3	1.7	3.37	.031
Respectful	1.3	1.1	1.3	1.8	2.12	.117
Compassionate	1.0	0.9	1.7	2.3	10.33	.000
Hopeful	0.8	0.6	1.0	1.6	6.58	.001
Humble	0.8	1.3	1.1	2.1	4.62	.009
Confident	0.4	0.3	0.4	1.4	10.24	.000
Obedient	0.8	0.3	0.9	1.5	5.95	.002
Unselfish	1.0	0.6	1.3	1.9	6.36	.002
Good	1.1	0.9	1.4	2.1	6.33	.002
Self-disciplined	0.6	0.6	1.1	1.3	2.70	.062
Motivated	1.0	0.8	1.4	2.1	4.85	.007

*Degrees of freedom = 3 for all items.
**Means are from a scale ranging from 0 (low) to 4 (high).

TABLE 5

Means and T-test Comparisons of for Substance vs. Context+Substance Accounts on Items Regarding Their Ability to Motivate

Subject Felt more:	Account Type Means: Substance	Context +Substance	T-values*	Two-tail Probability
Full of Integrity	0.9	1.8	3.76	.001
Respectful	1.4	1.9	3.65	.002
Compassionate	1.2	2.5	5.35	.000
Hopeful	1.4	2.0	2.15	.044
Humble	1.4	2.0	2.75	.012
Confident	0.8	1.3	4.07	.001
Obedient	1.2	1.5	1.93	.069
Unselfish	1.0	2.0	4.37	.000
Good	1.0	2.5	4.15	.000
Self-disciplined	1.0	1.7	4.20	.000
Motivated	1.2	2.6	4.26	.000

*Degrees of freedom = 20 for all items.
**Means are from a scale ranging from 0 (low) to 4 (high).

TABLE 6

Means and T-test Comparisons of for Context vs. Context+Substance Accounts on Items Regarding Their Ability to Motivate

Subject Felt more:	Account Type Means: Context	Context +Substance	T-values*	Two-tail Probability
Full of Integrity	1.2	1.9	2.94	.008
Respectful	1.2	2.0	3.93	.001
Compassionate	2.0	2.5	1.74	.096
Hopeful	1.0	2.1	5.66	.000
Humble	1.5	2.0	1.92	.069
Confident	0.6	1.4	3.55	.002
Obedient	1.1	1.7	2.27	.034
Unselfish	1.7	2.3	1.91	.069
Good	1.5	2.2	2.54	.019
Self-disciplined	1.0	1.5	2.32	.030
Motivated	1.2	2.0	3.37	.003

*Degrees of freedom = 21 for all items.
**Means are from a scale ranging from 0 (low) to 4 (high).

TABLE 7

Means and T-test Comparisons of for Substance vs. Context+Substance Accounts on Items Regarding Their Ability to Portray Human Virtues

Main Character Seemed:	Account Type Means: Substance	Context +Substance	T-values*	Two-tail Probability
Full of Integrity	6.0	6.6	3.01	.007
Respectful	6.1	6.5	2.42	.025
Compassionate	5.8	6.7	3.80	.001
Hopeful	6.0	6.3	1.38	.184
Humble	5.8	6.1	0.73	.475
Confident	5.6	6.0	1.33	.215
Obedient	5.9	6.2	1.83	.083
Unselfish	5.4	6.4	3.16	.005
Good	6.2	6.9	2.32	.031
Self-disciplined	6.2	6.3	3.49	.002

*Degrees of freedom = 20 for all items.
**Means are from a scale ranging from 1 (low) to 7 (high).

TABLE 8

Means and T-test Comparisons of for Context vs. Context+Substance Accounts on Items Regarding Their Ability to Portray Human Virtues

Main Character Seemed:	Account Type Means: Context	Context +Substance	T-values*	Two-tail Probability
Full of Integrity	5.8	6.1	1.28	.214
Respectful	5.8	6.0	0.62	.540
Compassionate	6.0	6.8	1.56	.134
Hopeful	5.9	6.3	1.52	.144
Humble	5.5	5.5	0.12	.905
Confident	5.6	5.4	0.15	.886
Obedient	5.2	5.5	1.10	.284
Unselfish	6.0	6.1	0.19	.854
Good	6.1	6.3	0.62	.542
Self-disciplined	5.9	6.1	0.90	.379

*Degrees of freedom = 21 for all items.
**Means are from a scale ranging from 1 (low) to 7 (high).

References

Bruner, J. S., Goodnow, J. J., & Austin, G. A. A Study of Thinking. New York: John Wiley & Sons, Inc., 1956.

Gagne, R. M. The Conditions of Learning (3rd ed.). New York: Holt, Rinehart and Winston, 1977.

Gagne, R. M. & Briggs, L. J. Principles of Instructional Design. New York: Holt, Rinehart and Winston, 1974

Gallie, W. B. Philosophy and the Historical Understanding. New York: Schocken Books, 1964.

Hilton, T. S. E. The Role of Analogy in Teaching Precise Concepts. An Unpublished Dissertation, Brigham Young University, 1982.

Kekes, J. Essentially contested concepts. In Philosophy and Rhetoric, 1977, 10(2), pp. 71-89.

Kohlberg, L. Moral development and identification. In H. W. Stevenson (ed.), Child Psychology. Chicago: U. of Chicago, 1963.

Merrill, M. D. & Tennyson, R. D. Teaching Concepts: An Instructional Design Guide. Englewood Cliffs, N.J.: Educational Technology Publications, 1977.

Merrill, P. F. Instructional strategies for intangible concepts. Paper presented at the annual conference of the National Society for Performance and Instruction, Washington, D.C., April, 1979.

Merrill, P. F., Wilcox, W., & Rollins, R. The Effects of Metaphors in Teaching Intangible Concepts. Paper presented at the annual convention of the American Educational Research Association, Los Angeles, April, 1981.

Smith, E. E. & Medin, D. L. Categories and Concepts. Cambridge, Mass.: Harvard University Press, 1981.